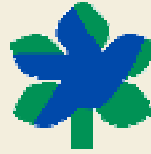




Biological Integrity Case Study:



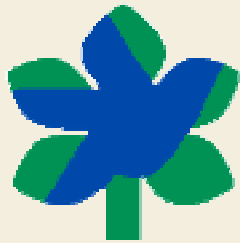
**ROYAL
BOTANICAL
GARDENS**

Patrick Colgan

presented by

John Hall

**Restoring the Biological Integrity of
Cootes Paradise
and
Grindstone Creek Marshes**



**ROYAL
BOTANICAL
GARDENS
www.rbg.ca**

Mission

Royal Botanical Gardens' mission is to be a living museum which serves local, regional and global communities while developing and promoting public understanding of the relationship between the plant world, humanity and the rest of nature.





Horticulture



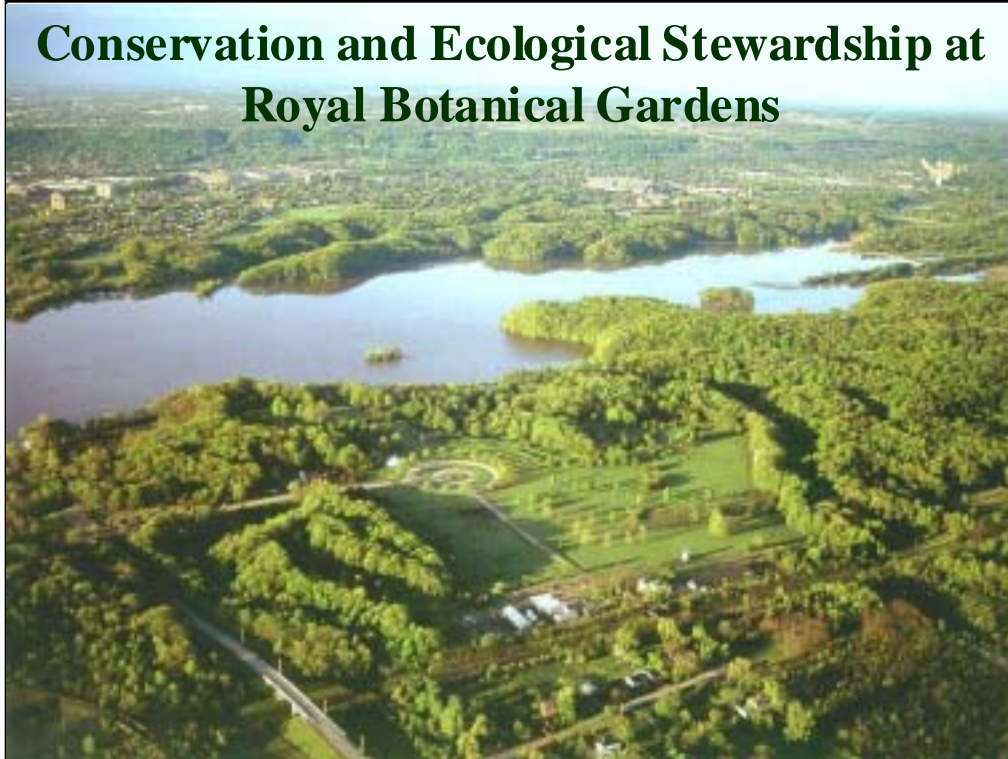
Education



Science and Conservation



Conservation and Ecological Stewardship at Royal Botanical Gardens

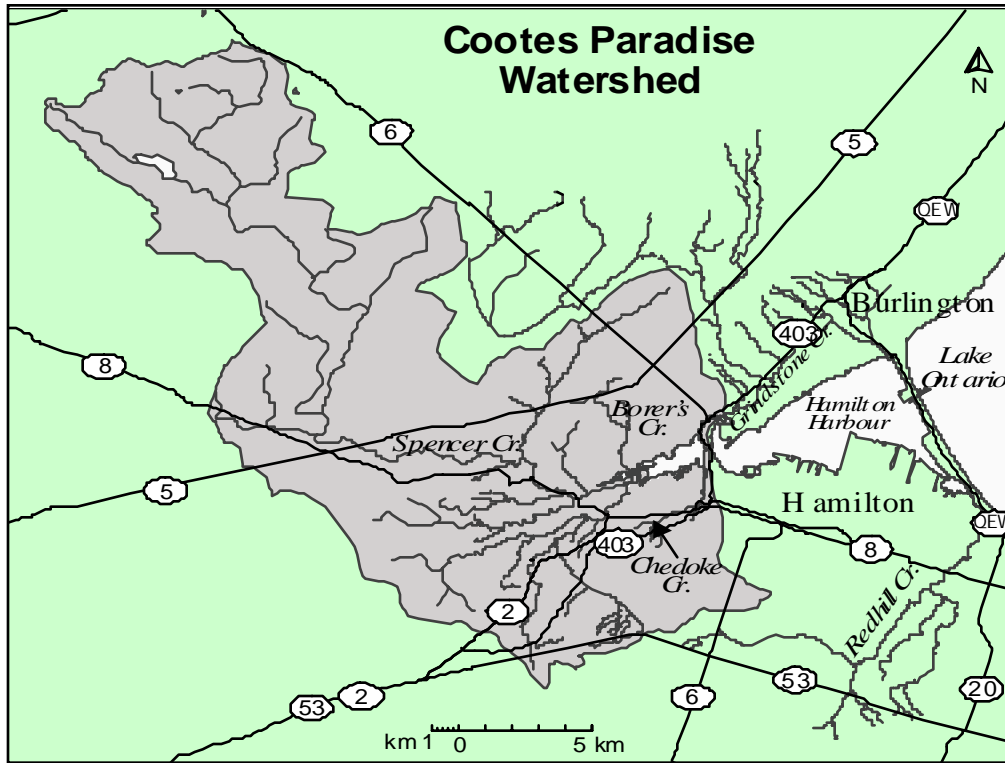




Project Paradise

The restoration of
Cootes Paradise marsh and
Grindstone Creek marsh.

An element of the
Hamilton Harbour
Remedial Action Plan.



Rationale for Multi-Year Restoration



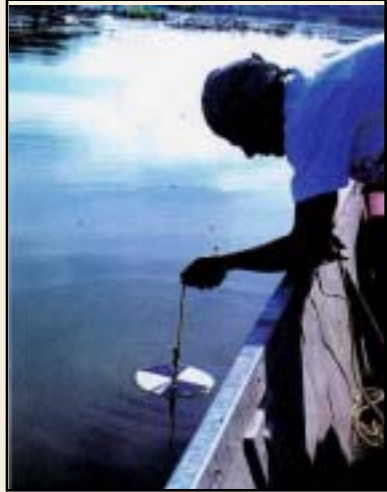
- Loss of fish and wildlife habitat
- Degraded fish and wildlife populations
- Degradation of benthos (lake bed organisms)
- Loss of natural filtration

Relevant Delisting Criteria for Areas of Concern



- Phosphorus
- Chlorophyll
- Water clarity
- Dissolved oxygen
- Plant area
- Suspended solids
- Bacteria

Key Project Paradise Recommendations



- Water Quality
- Fish and Wildlife Habitat
- Public Access and Aesthetics
- Education and Public Involvement
- Research and Monitoring

Project Paradise Deliverables

- Carp removal from Cootes Paradise through the Fishway (99.9% removed), and from Grindstone Creek marshes using Christmas tree exclosures
- Recreate marsh and riparian habitat in Cootes Paradise and Grindstone Creek marshes
- Monitor wildlife restoration using GIS
- Present field research to public and stakeholders
- Publications, Web site, educational programs, tours

Methods Employed



- Limit invasive species, particularly carp access
- Wetland replanting
- Stream channel rehabilitation
- Monitoring
- Support of watershed stewardship programs
- Education



Christmas tree carp barrier installation



six months later



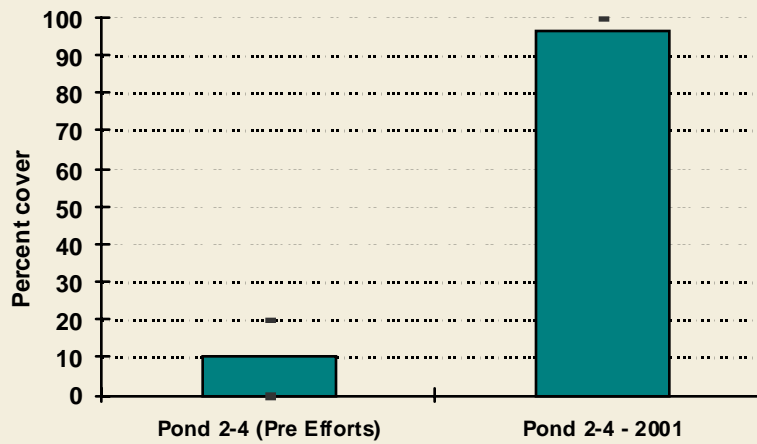
Results



- Water quality improvement
- Natural flora regeneration
- Fish and wildlife species improving
- Community diversity improving

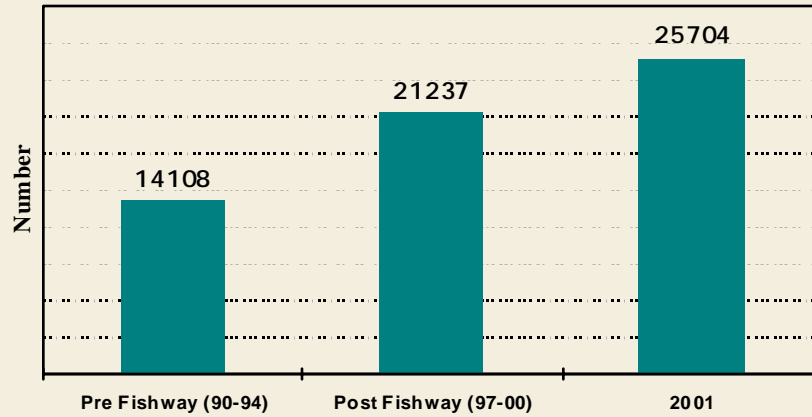
Submergent Plants

Hendrie Ponds Plant Abundance



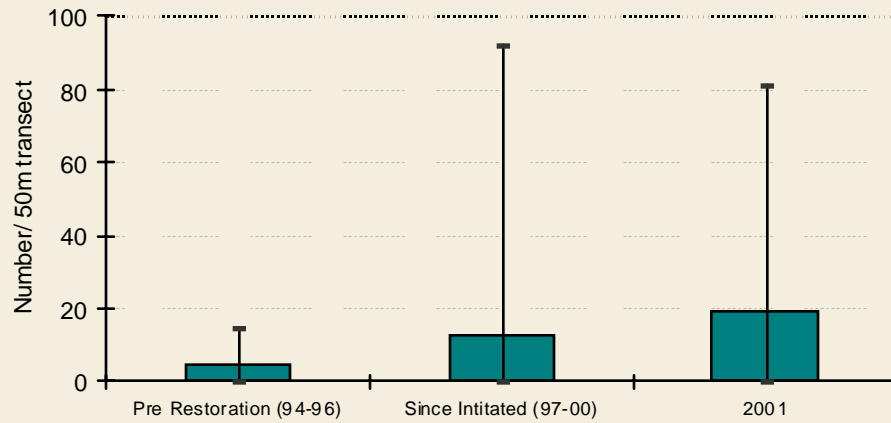
Fall Migrants—Individuals

Fall Waterbird Count



August Young of the Year Fish

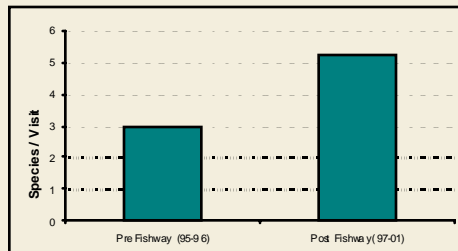
YOY Abundance in Cootes Paradise



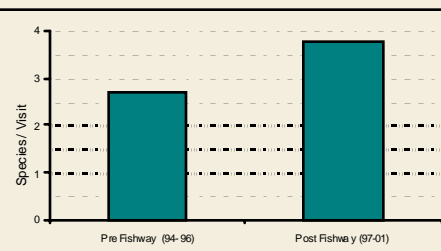
Biodiversity of Cootes Paradise

Restoration initiatives, specifically the elimination of carp, have contributed to the overall increase in species biodiversity in Cootes Paradise.

Breeding Marsh Birds



Amphibians





Rare species at RBG

Red mulberry (*Morus rubra*)

RBG supports what is likely Canada's largest population of this nationally endangered tree, and is extensively involved in its study and conservation.



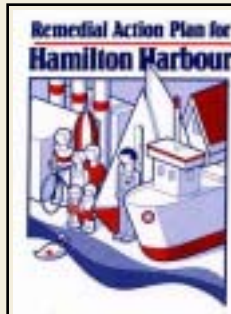
Benefits

- Enhanced biodiversity
- Greater productivity for outdoor recreation
- Public education on environmental restoration



Rehabilitation of Hendrie Valley Ponds has contributed to the production of 20 million young fish per year.

Thanks to our financial supporters



...and our non-financial supporters

